

L4 ANSWER 1 OF 3 USPATFULL
ACCESSION NUMBER: 2003:79098 USPATFULL
TITLE: 7-substituted tetracycline compounds
INVENTOR(S): Nelson, Mark L., Wellesley, MA, UNITED STATES
Frechette, Roger, Reading, MA, UNITED STATES
Viski, Peter, Brookline, MA, UNITED STATES
Ismail, Mohamed, Bedford, MA, UNITED STATES
Bowser, Todd, Charlton, MA, UNITED STATES
Bhatia, Beena, Arlington, MA, UNITED STATES
Messersmith, David, Somerville, MA, UNITED STATES
McIntyre, Laura, Arlington, MA, UNITED STATES
Koza, Darrell, Westerly, RI, UNITED STATES
Rennie, Glen, Weymouth, MA, UNITED STATES
Sheahan, Paul, Hopkinton, MA, UNITED STATES
Hawkins, Paul, Cambridge, MA, UNITED STATES
Verma, Atul, Arlington, MA, UNITED STATES
Warchol, Tadeusz, Acton, MA, UNITED STATES
Bandarage, Upul, Newton, MA, UNITED STATES

| NUMBER | KIND | DATE |
|----------------|------|--------------|
| US 2003055025 | A1 | 20030320 |
| US 2001-895812 | A1 | 20010629 (9) |

PATENT INFORMATION: US 2003055025 A1 20030320
APPLICATION INFO.: US 2001-895812 A1 20010629 (9)

| NUMBER | DATE |
|-----------------|---------------|
| US 2001-275576P | 20010313 (60) |
| US 2000-216760P | 20000707 (60) |

PRIORITY INFORMATION: US 2001-275576P 20010313 (60)
US 2000-216760P 20000707 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: Elizabeth A. Hanley, Esq., Lahive & Cockfield, LLP, 28 State Street, Boston, MA, 02109

NUMBER OF CLAIMS: 88
EXEMPLARY CLAIM: 1
LINE COUNT: 2462

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention pertains, at least in part, to novel 7-substituted tetracycline compounds. These tetracycline compounds can be used to treat numerous tetracycline compound-responsive states, such as bacterial infections and neoplasms, as well as other known applications for minocycline and tetracycline compounds in general, such as blocking tetracycline efflux and modulation of gene expression.

L4 ANSWER 2 OF 3 USPATFULL
ACCESSION NUMBER: 2002:337989 USPATFULL
TITLE: 7, 9-substituted tetracycline compounds
INVENTOR(S): Nelson, Mark L., Wellesley, MA, UNITED STATES
Frechette, Roger, Reading, MA, UNITED STATES
Viski, Peter, Brookline, MA, UNITED STATES
Ismail, Mohamed, Bedford, MA, UNITED STATES
Bowser, Todd, Charlton, MA, UNITED STATES
McIntyre, Laura, Arlington, MA, UNITED STATES
Bhatia, Beena, Arlington, MA, UNITED STATES
Hawkins, Paul, Cambridge, MA, UNITED STATES
Reddy, Laxma, Lexington, MA, UNITED STATES
Stapleton, Karen, Weymouth, MA, UNITED STATES
Warchol, Tad, Acton, MA, UNITED STATES
Sheahan, Paul, Hopkinton, MA, UNITED STATES

| NUMBER | KIND | DATE |
|----------------|------|--------------|
| US 2002193354 | A1 | 20021219 |
| US 2001-895797 | A1 | 20010629 (9) |

PATENT INFORMATION: US 2002193354 A1 20021219
APPLICATION INFO.: US 2001-895797 A1 20010629 (9)

| NUMBER | DATE |
|-----------------|---------------|
| US 2001-275620P | 20010313 (60) |

PRIORITY INFORMATION: US 2001-275620P 20010313 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: Elizabeth A. Hanley, Esq., Lahive & Cockfield, LLP, 28 State Street, Boston, MA, 02109

NUMBER OF CLAIMS: 61
EXEMPLARY CLAIM: 1
LINE COUNT: 1511

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention pertains to novel 7,9-substituted tetracycline compounds. These tetracycline compounds can be used to treat numerous tetracycline compound-responsive states, such as bacterial infections and neoplasms, as well as other known applications for minocycline and tetracycline compounds in general, such as blocking tetracycline efflux and modulation of gene expression.

L4 ANSWER 3 OF 3 USPATFULL
ACCESSION NUMBER: 2002:206638 USPATFULL
TITLE: 7,8 and 9-substituted tetracycline compounds
INVENTOR(S): Nelson, Mark L., Wellesley, MA, UNITED STATES
Koza, Darrell, Westerly, RI, UNITED STATES

| NUMBER | KIND | DATE |
|----------------|------|--------------|
| US 2002111335 | A1 | 20020815 |
| US 2001-894805 | A1 | 20010629 (9) |

PATENT INFORMATION: US 2002111335 A1 20020815
APPLICATION INFO.: US 2001-894805 A1 20010629 (9)

| NUMBER | DATE |
|-----------------|---------------|
| WO 2000-US21366 | 20000804 |
| US 2000-216656P | 20000707 (60) |

PRIORITY INFORMATION: WO 2000-US21366 20000804
US 2000-216656P 20000707 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: LAHIVE & COCKFIELD, 28 STATE STREET, BOSTON, MA, 02109

NUMBER OF CLAIMS: 26
EXEMPLARY CLAIM: 1
LINE COUNT: 1042

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB 7, 8 and 9-substituted tetracycline compounds, methods of treating tetracycline responsive states, and pharmaceutical compositions containing the 7, 8 and 9-substituted tetracycline compounds are described.

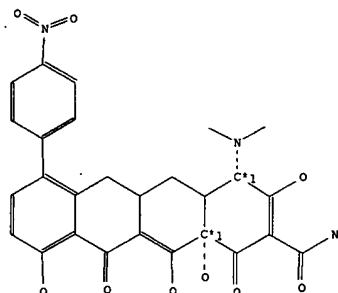
09/883,137

Page 3

=> d all 1-5

L8 ANSWER 1 OF 5 BEILSTEIN COPYRIGHT 2003 BEILSTEIN CDS MDL

Beilstein Records (BRN): 8601328
 Chemical Name (CN): 7-(4-nitrophenyl)sancycline
 Autonom Name (AUN): 4-dimethylamino-3,10,12,12a-tetrahydroxy-7-(4-nitro-phenyl)-1,11-dioxo-1,4,4a,5,5a,6,11,12a-octahydro-naphthacene-2-carboxylic acid amide
 C27 H25 N3 O9
 Molec. Formula (MF): 535.51
 Molecular Weight (MW): 16311, 2817
 Lawson Number (LN): Stereo compound
 File Segment (FS): isocyclic
 Compound Type (CTYPE): 7289045
 Constitution ID (CONSID): 8099158
 Tautomer ID (TAUTID): 2000/10/24
 Entry Date (DED): 2000/10/24
 Update Date (DUPD): 2000/10/24



Atom/Bond Notes:

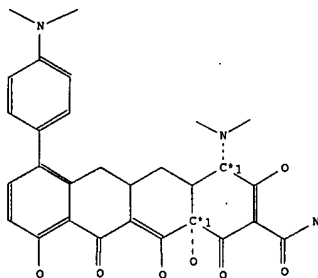
1. CIP Descriptor: S

Field Availability:

| Code | Name | Occurrence |
|------|-------------------|------------|
| BRN | Beilstein Records | 1 |
| CN | Chemical Name | 1 |
| AUN | Autonomname | 1 |
| MF | Molecular Formula | 1 |
| FW | Formular Weight | 1 |
| LN | Lawson Number | 2 |
| FS | File Segment | 1 |

L8 ANSWER 2 OF 5 BEILSTEIN COPYRIGHT 2003 BEILSTEIN CDS MDL

Beilstein Records (BRN): 8601284
 Chemical Name (CN): 7-(4-dimethylaminophenyl)sancycline
 Autonom Name (AUN): 4-dimethylamino-7-(4-dimethylamino-phenyl)-3,10,12,12a-tetrahydroxy-1,11-dioxo-1,4,4a,5,5a,6,11,12a-octahydro-naphthacene-2-carboxylic acid amide
 C29 H31 N3 O7
 Molec. Formula (MF): 533.58
 Molecular Weight (MW): 16311, 2817
 Lawson Number (LN): Stereo compound
 File Segment (FS): isocyclic
 Compound Type (CTYPE): 7288528
 Constitution ID (CONSID): 8096042
 Tautomer ID (TAUTID): 2000/10/24
 Entry Date (DED): 2000/10/24
 Update Date (DUPD): 2000/10/24



Atom/Bond Notes:

1. CIP Descriptor: S

Field Availability:

| Code | Name | Occurrence |
|--------|-------------------|------------|
| BRN | Beilstein Records | 1 |
| CN | Chemical Name | 1 |
| AUN | Autonomname | 1 |
| MF | Molecular Formula | 1 |
| FW | Formular Weight | 1 |
| LN | Lawson Number | 2 |
| FS | File Segment | 1 |
| CTYPE | Compound Type | 1 |
| CONSID | Constitution ID | 1 |
| TAUTID | Tautomer ID | 1 |
| ED | Entry Date | 1 |
| UPD | Update Date | 1 |

L8 ANSWER 1 OF 5 BEILSTEIN COPYRIGHT 2003 BEILSTEIN CDS MDL (Continued)

| Code | Name | Occurrence |
|--------|-----------------|------------|
| CTYPE | Compound Type | 1 |
| CONSID | Constitution ID | 1 |
| TAUTID | Tautomer ID | 1 |
| ED | Entry Date | 1 |
| UPD | Update Date | 1 |

This substance also occurs in Reaction Documents:

| Code | Name | Occurrence |
|-------|-------------------------------|------------|
| RX | Reaction Documents | 1 |
| RXPRO | Substance is Reaction Product | 1 |

Reaction:

RX

Reaction ID (.ID): 8565125
 Reactant BRN (.RBRN): 8597075, 3978722
 Reactant (.RCT): 7-iodosancycline, tributyl-(4-nitro-phenyl)-stannane
 Product BRN (.PBRN): 8601328
 Product (.PRO): 7-(4-nitrophenyl)sancycline
 No. of React. Details (.NVAR): 1

Reaction Details:

RX

Reaction RID (.RID): 8565125.1
 Reaction Classification (.CL): Preparation
 Yield (.YDT): 83 percent (BRN=8601328)
 Reagent (.RGT): CuI
 Catalyst (.CAT): Pd(PPh3)2Cl2
 Reaction Type (.TYP): Suzuki and Stille cross coupling
 Reference(s):
 1. Kozs, Darrell J., Org.Lett., CODEN: ORLEF7, 2(6), <2000>, 815 - 818;
 BABS-6238420

L8 ANSWER 2 OF 5 BEILSTEIN COPYRIGHT 2003 BEILSTEIN CDS MDL (Continued)

This substance also occurs in Reaction Documents:

| Code | Name | Occurrence |
|-------|-------------------------------|------------|
| RX | Reaction Documents | 1 |
| RXPRO | Substance is Reaction Product | 1 |

Reaction:

RX

Reaction ID (.ID): 8560228
 Reactant BRN (.RBRN): 8597075, 3118297
 Reactant (.RCT): 7-iodosancycline, (4-dimethylamino-phenyl)-boronic acid
 Product BRN (.PBRN): 8601284
 Product (.PRO): 7-(4-dimethylaminophenyl)sancycline
 No. of React. Details (.NVAR): 1

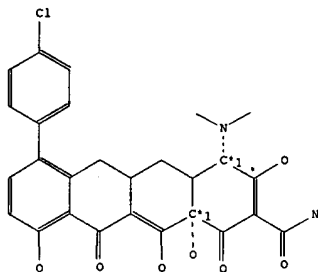
Reaction Details:

RX

Reaction RID (.RID): 8560228.1
 Reaction Classification (.CL): Preparation
 Yield (.YDT): 28 percent (BRN=8601284)
 Reagent (.RGT): CuI
 Catalyst (.CAT): Pd(PPh3)2Cl2
 Reaction Type (.TYP): Suzuki and Stille cross coupling
 Reference(s):
 1. Kozs, Darrell J., Org.Lett., CODEN: ORLEF7, 2(6), <2000>, 815 - 818;
 BABS-6238420

L8 ANSWER 3 OF 5 BEILSTEIN COPYRIGHT 2003 BEILSTEIN CDS MDL

Beilstein Records (BRN): 8600919
 Chemical Name (CN): 7-(4-chlorophenyl)sancycline
 Autonom Name (AUN): 7-(4-chloro-phenyl)-4-dimethylamino-3,10,12,12a-tetrahydroxy-1,11-dioxo-1,4,4a,5,5a,6,11,12a-octahydro-naphthacene-2-carboxylic acid amide
 C27 H25 Cl N2 O7
 Molec. Formula (MF):
 Molecular Weight (MW): 524.96
 Lawson Number (LN): 16311, 2817
 File Segment (FS): Stereo compound
 Compound Type (CTYPE): isocyclic
 Constitution ID (CONSID): 7288195
 Tautomer ID (TAUTID): 8095683
 Entry Date (DED): 2000/10/24
 Update Date (DUPD): 2000/10/24



Atom/Bond Notes:

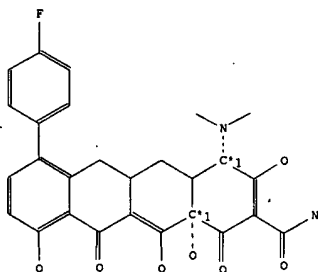
1. CIP Descriptor: S

Field Availability:

| Code | Name | Occurrence |
|--------|-------------------|------------|
| BRN | Beilstein Records | 1 |
| CN | Chemical Name | 1 |
| AUN | Autonomname | 1 |
| MF | Molecular Formula | 1 |
| FW | Formular Weight | 1 |
| LN | Lawson Number | 2 |
| FS | File Segment | 1 |
| CTYPE | Compound Type | 1 |
| CONSID | Constitution ID | 1 |

L8 ANSWER 4 OF 5 BEILSTEIN COPYRIGHT 2003 BEILSTEIN CDS MDL

Beilstein Records (BRN): 8600746
 Chemical Name (CN): 7-(4-fluorophenyl)sancycline
 Autonom Name (AUN): 4-dimethylamino-7-(4-fluoro-phenyl)-3,10,12,12a-tetrahydroxy-1,11-dioxo-1,4,4a,5,5a,6,11,12a-octahydro-naphthacene-2-carboxylic acid amide
 C27 H25 F N2 O7
 Molec. Formula (MF):
 Molecular Weight (MW): 508.50
 Lawson Number (LN): 16311, 2817
 File Segment (FS): Stereo compound
 Compound Type (CTYPE): isocyclic
 Constitution ID (CONSID): 7288071
 Tautomer ID (TAUTID): 8095796
 Entry Date (DED): 2000/10/24
 Update Date (DUPD): 2000/10/24



Atom/Bond Notes:

1. CIP Descriptor: S

Field Availability:

| Code | Name | Occurrence |
|--------|-------------------|------------|
| BRN | Beilstein Records | 1 |
| CN | Chemical Name | 1 |
| AUN | Autonomname | 1 |
| MF | Molecular Formula | 1 |
| FW | Formular Weight | 1 |
| LN | Lawson Number | 2 |
| FS | File Segment | 1 |
| CTYPE | Compound Type | 1 |
| CONSID | Constitution ID | 1 |
| TAUTID | Tautomer ID | 1 |
| ED | Entry Date | 1 |
| UPD | Update Date | 1 |

L8 ANSWER 3 OF 5 BEILSTEIN COPYRIGHT 2003 BEILSTEIN CDS MDL (Continued)

| Code | Name | Occurrence |
|--------|-------------|------------|
| TAUTID | Tautomer ID | 1 |
| ED | Entry Date | 1 |
| UPD | Update Date | 1 |

This substance also occurs in Reaction Documents:

| Code | Name | Occurrence |
|-------|-------------------------------|------------|
| RX | Reaction Documents | 1 |
| RXPRO | Substance is Reaction Product | 1 |

Reaction:

RX
 Reaction ID (.RID): 8559854
 Reactant BRN (.RBRN): 8597075, 2936346
 Reactant (.RCT): 7-iodosancycline, (4-chloro-phenyl)-boronic acid
 Product BRN (.PBRN): 8600919
 Product (.PRO): 7-(4-chlorophenyl)sancycline
 No. of React. Details (.NVAR): 1

Reaction Details:

RX
 Reaction RID (.RID): 8559854.1
 Reaction Classification (.CL): Preparation
 Yield (.YDT): 42 percent (BRN=8600919)
 Reagent (.RGT): CuI
 Catalyst (.CAT): Pd(PPh3)2Cl2
 Reaction Type (.TYP): Suzuki and Stille cross coupling
 Reference(s):
 1. Kozs, Darrell J., Org.Lett., CODEN: ORLEF7, 2(6), <2000>, 815 - 818; BABS-6238420

L8 ANSWER 4 OF 5 BEILSTEIN COPYRIGHT 2003 BEILSTEIN CDS MDL (Continued)

This substance also occurs in Reaction Documents:

| Code | Name | Occurrence |
|-------|-------------------------------|------------|
| RX | Reaction Documents | 1 |
| RXPRO | Substance is Reaction Product | 1 |

Reaction:

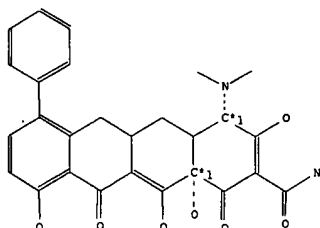
RX
 Reaction ID (.RID): 8562281
 Reactant BRN (.RBRN): 8597075, 3612877
 Reactant (.RCT): 7-iodosancycline, tributyl-(4-fluoro-phenyl)-stannane
 Product BRN (.PBRN): 8600746
 Product (.PRO): 7-(4-fluorophenyl)sancycline
 No. of React. Details (.NVAR): 1

Reaction Details:

RX
 Reaction RID (.RID): 8562281.1
 Reaction Classification (.CL): Preparation
 Yield (.YDT): 91 percent (BRN=8600746)
 Reagent (.RGT): CuI
 Catalyst (.CAT): Pd(PPh3)2Cl2
 Reaction Type (.TYP): Suzuki and Stille cross coupling
 Reference(s):
 1. Kozs, Darrell J., Org.Lett., CODEN: ORLEF7, 2(6), <2000>, 815 - 818; BABS-6238420

L8 ANSWER 5 OF 5 BEILSTEIN COPYRIGHT 2003 BEILSTEIN CDS MDL

Beilstein Records (BRN): 8598678
 Chemical Name (CN): 7-phenylsancycline
 Molec. Formula (MF): C₂₇ H₂₆ N₂ O₇
 Molecular Weight (MW): 490.51
 Lawson Number (LN): 16310, 2817
 File Segment (FS): Stereo compound
 Compound Type (CTYPE): isocyclic
 Constitution ID (CONSID): 7286775
 Tautomer ID (TAUTID): 8094947
 Entry Date (DED): 2000/10/24
 Update Date (DUPD): 2000/10/24



Atom/Bond Notes:
 1. CIP Descriptor: S

Field Availability:

| Code | Name | Occurrence |
|--------|-------------------|------------|
| BRN | Beilstein Records | 1 |
| CN | Chemical Name | 1 |
| MF | Molecular Formula | 1 |
| FW | Formular Weight | 1 |
| LN | Lawson Number | 2 |
| FS | File Segment | 1 |
| CTYPE | Compound Type | 1 |
| CONSID | Constitution ID | 1 |
| TAUTID | Tautomer ID | 1 |
| ED | Entry Date | 1 |
| UPD | Update Date | 1 |

This substance also occurs in Reaction Documents:

L8 ANSWER 5 OF 5 BEILSTEIN COPYRIGHT 2003 BEILSTEIN CDS MDL (Continued)

| Code | Name | Occurrence |
|-------|-------------------------------|------------|
| RX | Reaction Documents | 2 |
| RXPRO | Substance is Reaction Product | 2 |

Reaction:

RX
 Reaction ID (.ID): 8606477
 Reactant BRN (.RBRN): 8597075, 970972
 Reactant (.RCT): 7-iodosancycline, phenylboronic acid
 Product BRN (.PBRN): 8598678
 Product (.PRO): 7-phenylsancycline
 No. of React. Details (.NVAR): 1

Reaction Details:

RX
 Reaction RID (.RID): 8606477.1
 Reaction Classification (.CL): Preparation
 Yield (.YDT): 67 percent (BRN=8598678)
 Catalyst (.CAT): Pd(OAc)₂
 Solvent (.SOL): methanol
 Reaction Type (.TYP): Suzuki and Stille cross coupling
 Reference(s):
 1. Koza, Darrell J., Org.Lett., CODEN: ORLEF7, 2(6), <2000>, 815 - 818;
 BABS-6238420

Reaction:

RX
 Reaction ID (.ID): 8562258
 Reactant BRN (.RBRN): 8597075, 3610571
 Reactant (.RCT): 7-iodosancycline, tributyl-phenyl stannane
 Product BRN (.PBRN): 8598678
 Product (.PRO): 7-phenylsancycline
 No. of React. Details (.NVAR): 1

Reaction Details:

RX
 Reaction RID (.RID): 8562258.1
 Reaction Classification (.CL): Preparation
 Yield (.YDT): 87 percent (BRN=8598678)
 Reagent (.RGT): CuI
 Catalyst (.CAT): Pd(PPh₃)₂Cl₂
 Reaction Type (.TYP): Suzuki and Stille cross coupling
 Reference(s):
 1. Koza, Darrell J., Org.Lett., CODEN: ORLEF7, 2(6), <2000>, 815 - 818;
 BABS-6238420

=> d his

(FILE 'HOME' ENTERED AT 12:58:15 ON 22 APR 2003)

FILE 'REGISTRY' ENTERED AT 12:58:23 ON 22 APR 2003

L1 STRUCTURE UPLOADED

L2 15 S L1

L3 218 S L1 FULL

FILE 'USPATFULL' ENTERED AT 13:01:52 ON 22 APR 2003

L4 3 S L3

FILE 'CAPLUS' ENTERED AT 13:04:40 ON 22 APR 2003

L5 11 S L3

L6 0 S L5 NOT PY>=2000

L7 0 S L5 NOT L4

FILE 'BEILSTEIN' ENTERED AT 13:05:28 ON 22 APR 2003

L8 5 S L1 FULL

FILE 'SCISEARCH' ENTERED AT 13:08:27 ON 22 APR 2003

L9 90 S KOZA?/AU AND 2000/PY AND 2/SO

L10 0 S KOZA?/AU AND 2000/PY AND 2/SO AND 814/SO